SECTOR ASSESSMENT (SUMMARY): TRANSPORT (ROAD TRANSPORT [NONURBAN])

I. Sector Performance, Problems, and Opportunities

1. The transport sector contributes about 10% to Pakistan's gross domestic product and more than 6% to the country's overall employment.[1] Upgrading Pakistan's transportation system is critical to both export competitiveness and economic growth. Roads are the predominant mode of transport in Pakistan, accounting for more than 92% of passenger and 96% of freight traffic in 2010; total inland traffic by road was estimated at 325 billion passenger-kilometers (km), and by rail at 59 billion freight ton-km.[2]

2. **Provincial context.** Khyber Pakhtunkhwa is one of the four provinces of Pakistan, in the northwestern region of the country. Geographically the smallest, it ranks third in terms of population (about 30 million or 16% of the country's population) and economic production, accounting for 10.5% of Pakistan's economy. The economy in Khyber Pakhtunkhwa is dominated by forestry (about 61% of the national forestry output); mining (20% of national output); agriculture (main cash crops are wheat, maize, tobacco, rice, sugar beets, and a wide variety of fruits and vegetables); and some manufacturing. All these economic activities require a reliable transport system and efficient connectivity to lower transportation cost and improve competitiveness.

3. Khyber Pakhtunkhwa is particularly reliant on road transport. It also provides the main transit corridor to Afghanistan across the Khyber Pass. The province's classified paved road network of 15,102 km includes 1,878 km of national highways managed by the National Highway Authority (NHA), 1,824 km of provincial highways[3] managed by the Pakhtunkhwa Highways Authority (PKHA), and 11,400 km of district roads managed by the provincial Communication and Works Department (CWD). Provincial highways connect district centers with the national highway network, and play a vital role in the economic development of the province. With an average daily traffic of 3,000–8,000 vehicles, provincial highways also connect provincial administrative and commercial centers with district capitals and market towns. They are vital in facilitating intra-provincial trade and commerce; providing access to health, education, and other public services; and reducing poverty by creating jobs and business opportunities.

4. **Road institution.** The CWD is responsible for all 13,224 km of provincial and district roads in Khyber Pakhtunkhwa. The PKHA, an independent entity under the CWD, is the custodian of the 25 provincial highways. It is headed by a managing director with responsibilities for the planning, development, construction, and operation and maintenance of the provincial highways and district roads. The PKHA has four regional offices in the north, center, south, and east of the province, and one road maintenance unit.

5. **Deteriorated road conditions**. Because of an aging infrastructure and poor asset management, road surface conditions and travel quality are deteriorating. Inadequate drainage is a major cause of premature road failure. The pavement conditions of more than half of the road network are rated poor or bad, according to a 2013 survey. Out of 1,878 km of provincial roads, about 700 km suffer from a maintenance backlog and have a pavement condition index (PCI) of less than 2;[4] at least a third of the backlogged roads will require reconstruction, while the

---

[1] Government of Pakistan, Ministry of Planning, Development and Reform. 2014. *Pakistan 2025 – One Nation. One Vision*. Islamabad. http://pakistan2025.org

[2] World Bank. World Development Indicators database. http://databank.worldbank.org/data/home.aspx (accessed on 10 March 2014). Washington, DC.

[3] Excluding 380 km of provincial highways located in Federally Administered Tribal Areas.

[4] PCI is an indicator of pavement performance that ranges from 0 to 7 for asphaltic roads. A PCI value of 0 denotes a road in extremely poor condition, a PCI value of 7 denotes a newly constructed, distress-free asphaltic road.

remaining sections will need major rehabilitation. Low technical standards and inadequate safety features have contributed to road safety hazards, especially at intersections near built-up areas. Rehabilitation interventions focused on road links in poor to bad condition will help reduce the maintenance backlog, reduce the financial burden of maintenance, and improve the overall condition and safety of the provincial road network.

6. **Road asset management**. The PKHA set up a road asset management system (RAMS) financed by the Asian Development Bank (ADB),[5] and a dedicated RAMS Directorate. A basic database with information on road inventory and conditions is being established through an interface with the Highway Development and Management (HDM-4) Model. A falling weight deflectometer and a profilometer are being used to survey pavement conditions and collect data. An annual maintenance plan for fiscal year (FY) 2015 was prepared with the assistance of a consultant utilizing RAMS. The sector assessment showed that the RAMS operations require hardware and software upgrades to the latest technological standards, an embedded geographic information system, and staff training. The RAMS will also need to be expanded to cover bridges and large drainage structures, road safety and traffic management infrastructure, and geotechnical infrastructure such as slope retaining structures, embankments, or tunnels. The PKHA will allocate dedicated annual budget to fund data collection and the operational expenditure of the RAMS.

7. **Overloading.** Overloading has always been an issue in Pakistan, and is a particularly serious problem in Khyber Pakhtunkhwa with its logging, quarrying, and mining traffic, especially in the marble-producing areas. Although light-duty vehicles account for 80%–90% of the traffic in the province, trucks in all categories tend to be overloaded by up to 95%, and some as high as 100% above the permissible load limits. Roads under the control of the central division of the PKHA carry the heaviest traffic, those in its southern division the lowest. Overloading reduces the design life of pavements and results in premature deterioration, often leading to catastrophic failure. The PKHA set up two stationary weighbridges, and is investing in mobile vehicle-weighing equipment to tackle this problem. However, vehicle overloading control requires a multifaceted approach, such as a regulatory overhaul, self-regulation by the trucking industry, selective enforcement with modern technology, vehicle taxation to encourage replacement of rigid single-axle configurations by multi-axle ones, overloading control at source, and use of stronger pavements based on actual axle loads. The actual axle load spectrum was considered in the design for the current project, and the PKHA has started to enforce control measures at the source of overloading, such as at marble mines and factories.

8. **Sustainable road maintenance.** Road maintenance sustainability has been a challenge in Khyber Pakhtunkhwa. Annual budget allocations for road maintenance and preservation have been insufficient to operate and maintain the road system at an acceptable service level. The CWD, including the PKHA, received on average about 2.0%–2.5% of the province's annual budget for the road subsector, but most of this allocation was spent on new road and bridge construction or upgrades, especially during 2014–2017. The expenditure for road repairs and maintenance was more than 10% of total spending on roads in 2014–2015, but this fell to 8% in FY2016 and is expected to fall to around 6% in FY2017.[6] The PKHA set up a Road Maintenance Fund with financing from the provincial budget allocation (98%) and revenues generated from road tolls and leasing of property within rights-of-way (2%). The government is also promoting public–private partnerships (PPPs) in the road subsector to improve the efficiency of road

[5] ADB. 2004. *Report and Recommendation of the President on Proposed Loans to the Islamic Republic of Pakistan for the North-West Frontier Province Road Development Sector and Subregional Connectivity Project.* Manila.

[6] During FY2017, Khyber Pakhtunkhwa released additional funding of $85 million for the construction of the Swat Expressway, leading to an increase in the PKHA budget for new works of about 250% from FY2016.

investment and maintenance under long-term build–operate–transfer arrangements. The project will help expand toll roads and increase tolling revenue, and support the PKHA in boosting its maintenance budget allocation to not less than 10% of its total annual budget.

9. **Performance-based maintenance.** Currently, routine and periodic maintenance is carried out on small road sections of about 100–200 meters each, which results in an uneven road surface full of patches that disintegrates under heavy traffic. The maintenance (mostly focused on emergency repairs) is carried out by small contractors through contracts bid for annually. The budget allocation for routine maintenance cannot be guaranteed; thus, large sections of the road network do not receive regular systematic maintenance based on sound asset management practice. The performance-based maintenance (PBM) concept is a relatively new approach designed to increase the efficiency and effectiveness of road maintenance, which changes the role of a contractor from executor to road asset manager, and the contractor is paid for outputs or a pre-defined level of service instead of inputs. PBM focuses on incentives to obtain good performance and sustainable results under a multi-year maintenance contract. The current project is piloting two 5-year PBM contracts covering about 104 km of provincial roads that are still in fair to good conditions. The intent of these PBM contracts is to maintain high road serviceability while ensuring durability of all road infrastructure elements: pavements, shoulders, slopes, drainage structures, and road safety furniture. Based on the results of the pilots, the intention is to replicate PBM for the entire provincial road network. This could provide a model for application in other jurisdictions.

II. Government's Sector Strategies

10. The CWD's policies are consistent with its long-term vision of providing presentable, economical, sustainable, and durable physical infrastructure for nation building, compatible with economic efforts to improve the quality of life of the citizens of the province.[7] The PKHA is mandated to plan, develop, construct, operate, and maintain the provincial road network efficiently and sustainably so as to improve connectivity in the province. The government's transport sector strategies call for it to focus on (i) optimal utilization of its existing capacity with an emphasis on rehabilitation and upgrades of poor-quality roads; (ii) selective and cost-efficient investment in economically viable new roads, including expansion of the rural network; (iii) development of a road network to facilitate transport and trade within Khyber Pakhtunkhwa and with neighboring provinces; (iv) development of innovative financing mechanisms to boost private sector participation; (v) prioritization of road maintenance and safety; (vi) effective control of overloading; and (vii) development of the capacity of road transport agencies.

11. **Budgetary resources**. The budget allocations for the road subsector in Khyber Pakhtunkhwa increased from PRs5.8 billion in 2015 to PRs6.3 billion in 2016, to PRs14.8 billion in 2017, but most of it was spent on new construction and nowhere near enough on routine and periodic maintenance to preserve a minimum level of service. The provincial government needs to rebalance the road maintenance and development budgets, and explore more funding sources for the road subsector.

12. **Private participation**. The Government of Khyber Pakhtunkhwa has been trying to engage the private sector in road development through PPP or other modes. It is also pondering how to engage the private sector in road maintenance. One option is the use of PBM contracts that would mandate the operation and maintenance of a road for a specified period with a defined

[7] Government of Pakistan. Communication and Works Department. http://communication_works.kp.gov.pk/page/vision

level of service. The CWD is also thinking of establishing more toll plazas on some roads with higher commercial traffic to increase revenue.

III. ADB Sector Experience and Assistance Plan

13. ADB's assistance to Pakistan's transport sector has been significant, totaling more than $5.3 billion.[8] Since 2005, ADB has financed upgrades and improvements of national highways and provincial roads in some provinces, as well as construction of new motorways. ADB is also financing investments in better border-crossing facilities at several points along the road and rail networks. The experience and lessons will feed into all new projects. The country partnership strategy, 2015–2019 for Pakistan supports its strategic focus on regional integration, in that ADB will help strengthen regional connectivity in transport and energy, e.g., by supporting (i) the extension of Central Asia Regional Economic Cooperation (CAREC) corridors to the ports of Gwadar and Karachi, (ii) the Turkmenistan–Afghanistan–Pakistan–India natural gas pipeline project, and (iii) transport and trade facilitation with an emphasis on development of economic corridors to expand economic opportunities for communities in surrounding areas.[9] For transport, ADB assistance was designed to improve regional connectivity and transport efficiency through physical investment and technical assistance.

14. However, despite the efforts of ADB and counterpart agencies, significant implementation challenges remain in completing projects on time and on budget. Efficient project implementation requires further improvements by implementing agencies in procurement, safeguards, and contract management. A review of the effectiveness of ADB interventions in Pakistan noted that while some progress had been made in making transport corridors function better, the NHA's revenue remained insufficient and, especially at provincial level, road administrations lacked asset management systems, sustainable means of revenue generation, contract management skills, needs-based allocation of funds, focus on maintenance, and compliance with international practice on safeguards.[10]

15. During 2015–2019, the goal of ADB's transport strategy in Pakistan will be to support economic and social development by ensuring that transport infrastructure is accessible, safe, environmentally friendly, and affordable, as proposed in its Sustainable Transport Initiative—Operational Plan.[11] In the road subsector, ADB will focus on the improvement of regional connectivity, transport efficiency, and road safety, with attention on upgrading the CAREC corridors. ADB will continue to assist the construction or rehabilitation of national and provincial highways; strengthening institutions; and building the capacity of transport agencies in areas such as road safety, strategic planning, transport policy development, road asset management, safeguard compliance, and procurement.

---

[8] ADB. 2018. *Asian Development Bank and Pakistan: Fact Sheet*. https://www.adb.org/sites/default/files/publication/27786/pak-2017.pdf
[9] ADB. 2015. *Country Partnership Strategy: Pakistan, 2015–2019*. Manila.
[10] ADB. 2013. *Country Assistance Program Evaluation: 2002–2012: Continuing Development Challenges.* Manila.
[11] ADB. 2010. *Sustainable Transport Initiative – Operational Plan*. Manila.

Problem Tree for Transport (Road Transport [Nonurban])